

Brent Daignault, P.Eng.

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Highlights

- Professional engineer with APEGGA, 21 years
- MCSD in VB.NET and C# in 2005
- Well developed mathematical background
- Extensive experience in scientific programming and simulation modeling in many different technical fields: geophysics, surveying (GPS and terrestrial), GIS, hydraulics and hydrology, open channel flow, field data collection and analysis, and mapping. (Fortran, C/C++, VB, C#)
- International work experience
- Interested in using my diverse skills to develop solutions in business and technical areas in a team setting

Education

MCSD Certified, VB.NET, and C# - April 2005
UML - Continuing Education, University of Calgary, fall, 2002
Intermediate C++ - Continuing Education, University of Calgary, fall, 2002
B.Sc. – Civil Engineering, University of Calgary, 1984
Post-Graduate Course in Groundwater Hydraulics and Hydrology, U of C, 1984
Various Oilfield Certifications (WMIS, H2S, Bear Awareness, First Aid, CPR, ATV)

Professional Membership

Assoc. of Professional Engineers, Geologist and Geophysicists of Alberta (APEGGA), Professional Member since 1986

Employment Background

Software Developer, President and Owner, Feb 2005 - Current
Special Projects Consulting Ltd., Calgary, Alberta

- **Gravity Surveys**
 - NWT, Mar-Apr, 2007 – Kimberlite pipes for diamond exploration, Arctic Star
 - NB, Jan-Feb, 2007 – base metals, Slam Exploration
 - AB, Oct-Nov, 2006 – Kimberlite pipes for diamond exploration, Ashton Minerals
 - NWT, Jul-Aug, 2006 – Kimberlite pipes for diamond exploration, Arctic Star
 - NWT, May-Jun, 2006 – Kimberlite pipes for diamond exploration, Sanatana
 - NWT, Mar-Apr, 2006 – Kimberlite pipes for diamond exploration, Arctic Star
 - Guyana, Jan-Feb, 2006 – geologic structures for oil and gas, Groundstar Resources
 - BC, Nov-Dec, 2005 – base metals mine, overburden analysis, Bull River Mine
- **Ground Magnetism Surveys**
 - BC, Oct, 2005 – base metals claim, preliminary survey
- **Modeling**
 - AB, Sep, 2006 – location of faults in Guyana gravity data, Groundstar Resources
 - AB, Dec, 2006 – near-surface gravity anomaly study, Groundstar Resources

Project Coordinator and Technical Support, 2003 – 2005
Zedi Solutions Inc., Calgary, Alberta

- **Project coordinator** for product ordering, installation, setup, account management, field service and repair work.
- **Technical support** to my group on internal business systems, including Windows and web programming.

Vice-President, Technical Development, 1995 – 2002
Excel Geophysics Inc, High River, Alberta
Self-employed, President and Owner, 1994-1995

Special Projects Consulting, Calgary, Alberta

- **Developed geophysical software** for Excel Geophysics Inc.
- **Developed a graphical interface** to WRMM model output for Alberta Environment.
- **Developed graphical output** for groundwater pumping tests and stream flow models in HEC-2 for Komex International.

Brent Daignault

Employment Background (continued)

Help Desk Technical Support, 1994

IBM Canada, Calgary, Alberta

- **Customer Service Rep**, hardware and software telephone support.

Project Engineer, 1993

EMA/Golder Associates, Calgary, Alberta

- **Used environmental and engineering modeling software** on surface and ground water studies including stream and reservoir hydraulics.

Project Engineer, 1989 -1992

WER Engineering Ltd., Calgary, Alberta

- Wrote reservoir operation simulation software.
- Converted mainframe Fortran canal hydraulics software to SCO Unix on PC.
- Used canal hydraulics software to model the Western Irrigation District (WID) operations and storm water inflows.
- Operated the Water Resources Management Model (WRMM) on Alberta Environment watersheds.

Project Engineer, 1985 – 1988

Nanuk Engineering Ltd., Cochrane, Alberta

- Designed and wrote a mass-transport concentration tracking model for river contaminant studies.
- Used canal hydraulics software to model flow through structures in the Bow River Irrigation District (BRID); HEC-2 and HEC-6 modeling software for further river studies.

Software Engineering and Programming Skills

- **Write software on the following topics**
 - **Modeling** of 2-D and 3-D gravity and geomagnetics.
 - **Coordinate transformations** between various ellipsoids and projections: geographic, UTM, Lambert Conformal Conic, Albers, NAD 27, NAD 83, US State Plane, Canadian NTS maps, township and range, well locations; embedded National Transform, and NADCON routines for in-house apps.
 - **File format conversions** of government and industry data sets for map display and grid operations; Arc/Info, Autocad, ERMapper, Landmark products.
 - **Grid filtering** operations: median, terrain analysis, shading, levelling, FFT.
 - **Terrain modeling** using Delaney Triangulation; outer terrain corrections, shaded relief images.
 - **Tidal forces** due to the sun and moon; vertical gravity vector.
 - **Ocean tides**, from field studies, as part of the Caribbean field trip.
 - **Bouguer gravity** and regional residual separation filtering.
 - **High-resolution aeromagnetism**: levelling, TMI, reduced to pole, vertical derivatives, upward and downward continuation; IGRF, and base corrections.
 - **Basic and advanced statistics**, curve-fitting, least squares and robust fit to a line, 2-D cross correlations, 1-D and 2-D median filtering and FFT.
 - **Field data logging**: data storage and retrieval from HP calculators, MS DOS handheld computers.
- **Assemble and make maps** with multiple data layers, using GS Surfer software; vector and raster overlays, shaded relief, colour contour images, multi-view, combined with data graphs, charts, photographs for complex layouts.
- **Combine data from varied sources** such as government, client, field acquisition, and the internet to create a 'value-added' product using both my own programs, and purchased software.
- **Design and code algorithms** starting with literature search in journals, studying the mathematics involved, and choosing possible methods to improve performance; past topics include gravity and mag-related computations, searching and sorting, graph theory, triangulation, vector algebra and geometry, matrices, GIS-related topics.
- **Design, create and run software** in Windows and Linux, using Fortran, C++, VB, AWK script, in batch processing mode, command line interactive, and GUI interfaces.
- **Build data architecture and processing systems** using a modular approach; small customizable components; 'fast track' development as field data is collected.
- **Write documentation** for software use, data processing, and mapping methods; recommendations for updates, software limitations, and modifications made; produced 200+ page manual.
- **Design and build the company web site**

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Project Management Skills

- **Field Supervisor :**
 - Ft. Nelson, and Ft. St. John, BC 2002
 - Montana, USA 2000 – 2002
 - Tanzania, Fall 1999
 - Caribbean, Spring 1998
 - Voisey's Bay, Labrador Winter 1996, Summer 1997
- **Analyze data flow and maps** by charting input validation, format, merging sources, and error checking; study results both in the field and office, and provide feedback to improve procedures.
- **Design and write**
 - **Job specifications:** number of crews needed, data layout, equipment required, duration of field work, program layout, choice of methods to collect the data, performance issues, scheduling, and evaluate and supervise the ongoing processing and completion of each job.
 - **Instruction manuals** for field data collection, processing, use of software, and mapping techniques; in-field observation and training.
 - **Processing specifications** for each project by using current procedures and software or by designing new components.
 - **Data and equipment requirements** for field collection, purchase of data sets from government, industry, or other sources; method of data collection, equipment layout, use of base stations and their locations, and processing.
- **Evaluate**
 - **Equipment** and make recommendations required for various office and field assignments, prioritizing needs, assuring compatibility of components, and acquiring price quotes.
 - **Software efficiency and accuracy** by testing and comparing all options and file formats the user may encounter; compare results with previous versions and other software.
 - **Software modifications and upgrade** requirements; install upgrades after testing changes.
 - **Office network and workstations** using criteria such as speed, access to the network, storage space and memory; schedule hardware inspections; trouble-shoot and repair as needed; investigate system error logs.
 - **Project duration** based on field production, weather, processing load, delivery of data and other materials.
- **Examine and evaluate field reports, data, and maps** for completeness and accuracy, missing or incorrect information, proper documentation and credit, and pleasing presentation and layout.
- **Educate** clients through seminars about gravity acquisition and interpretation, and project planning and design.

Personnel Management Skills

- **Train and supervise field staff and junior office** staff on field procedures, field equipment, data processing, use of in-house and purchased software, and map work.
- **Evaluate junior office and field staff** on their speed and efficiency, quality of work, ability to grasp new concepts and to analyze problems, and ability to work as a team member; give encouragement and feedback.
- **Evaluate field work performance** based on skills, safety, speed and accuracy.

Leisure and Recreational Interests

Computer programming -- astronomy and astrophysics -- mathematical and logic problems – Linux – running – squash -- reading science fiction and mysteries – BMW motorcycles.